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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/602,713

06/25/2003

Akio Takahashi

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01/26/2005

ANTONELLI, TERRY, STOUT & KRAUS, LLP  
1300 NORTH SEVENTEENTH STREET  
SUITE 1800  
ARLINGTON, VA 22209-9889

EXAMINER

FEELY, MICHAEL J

ART UNIT

PAPER NUMBER

1712

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/602,713

Applicant(s)

TAKAHASHI ET AL.

Examiner

Michael J. Feely

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2003.  
2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.  
7) ☒ Claim(s) 1-3 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 25 June 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 0603.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: **3A** is described as a glass epoxy laminate plate in Figure 4 (see page 36, line 22); however, **3A** does not appear in Figure 4. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: **12** of Figure 3; **3** and **23** of Figure 4. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted

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by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

3. Claims 1-3 are objected to because of the following informalities:

- Claims 1, 2, and 3 redundantly use the phrase “as essential components”:
  - Claim 1: “as essential components and is in a liquid form at a room temperature (25°C), and inorganic filler as essential components”;
  - Claim 2: “as essential components and is in a liquid form at a room temperature (25°C), and metallic powder as essential components”;
  - Claim 3: “as essential components and is in a liquid form at a room temperature (25°C), and conductive metallic powder as essential components”.
- In claim 1, “(25°C)” should be changed to --(25°C)--.
- In claims 1-3, “OR<sup>1</sup>” should be changed to --OR<sup>1</sup>-- (*see bottom alkoxy group*).

Appropriate correction is required.

### ***Specification***

4. The disclosure is objected to because of the following informalities: the cross-referencing information should be updated showing that the parent application is now patented as US Pat.

No. 6,821,657.

Appropriate correction is required.

*Claim Language Suggestions*

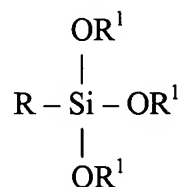
5. Claims 1-3 recite that the organosilicon polycondensates are “formed in the epoxy resin”.

It is clear from the examples that at least a portion of the polycondensation takes place in the presence of an epoxy resin. For improved clarity, it is suggested that the phrase “formed in the epoxy resin” be changed to --in the presence of the epoxy resin--.

This language also appears in the Specification. Changes to the Specification are also suggested for the purpose of consistency.

*The following is a set proposed claim changes:*

1. A semiconductor device in which at least part of the semiconductor is coated or sealed with a thermosetting resin material, wherein the thermosetting resin material comprises a solvent-free thermosetting resin composition, which comprises (a) an epoxy resin, (b) a reaction product of an organosilicon compound, represented by general formula (1)

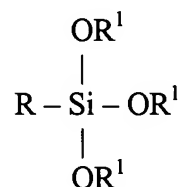


(where R is an organic group containing a functional group reactive with an epoxy resin by addition reaction; and R<sup>1</sup> is a methyl or ethyl group), with water in the presence of the epoxy resin, (c) a curing agent, and (d) an inorganic filler as essential components; and said composition is in a liquid form at room temperature (25°C).

2. A semiconductor device in which a semiconductor chip and a lead frame are bonded together using a die bonding material containing a thermosetting material, wherein the

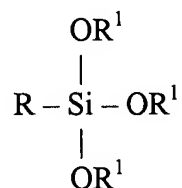
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thermosetting resin material comprises a solvent-free thermosetting resin composition, which comprises (a) an epoxy resin, (b) a reaction product of an organosilicon compound, represented by general formula (1)



(where R is an organic group containing a functional group reactive with an epoxy resin by addition reaction; and  $\text{R}^1$  is a methyl or ethyl group), with water in the presence of the epoxy resin, (c) a curing agent, and (d) a metallic powder as essential components; and said composition is in a liquid form at room temperature (25°C).

3. A semiconductor device in which the semiconductor and a wiring board are mounted using a thermosetting resin material, wherein the thermosetting resin material comprises a solvent-free thermosetting resin composition, which comprises (a) an epoxy resin, (b) a reaction product of an organosilicon compound, represented by general formula (1)



(where R is an organic group containing a functional group reactive with an epoxy resin by addition reaction; and  $\text{R}^1$  is a methyl or ethyl group), with water in the presence of the epoxy resin, (c) a curing agent, and (d) a conductive metallic powder as essential components; and said composition is in a liquid form at room temperature (25°C).

***Allowable Subject Matter***

6. Claims 1-3 would be allowable if rewritten or amended to overcome the objection(s) set forth in this Office action.

7. The following is a statement of reasons for the indication of allowable subject matter: the closest prior art is Treadway (US Pat. No. 6,100,313).

*Treadway (US Pat. No. 6,100,313):* disclose a composition similar to the one used in the instant invention (*see: column 1, line 60 through column 2, line 20; column 3, lines 12-32; column 4, lines 1-25; and column 5, lines 9-26*). Treadway is deficient because he does not incorporate fillers into his composition, and he does not use his composition with semiconductor devices. Rather, Treadway uses his composition to coat eyeglass lenses.

***Conclusion***

8. This application is in condition for allowance except for the following formal matters:  
*See the above objections to the Drawing, the Claims, and the Specification.*

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

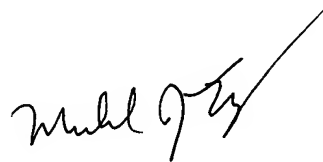
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***Communication***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Feely whose telephone number is 571-272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Michael J. Feely', with a long diagonal stroke extending upwards and to the right.

Michael J. Feely  
Patent Examiner  
Art Unit 1712

January 20, 2005